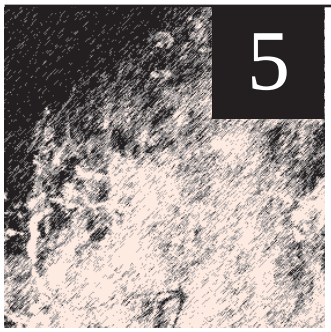

5

Conditions for a Fire

What do hot, gusty winds; dry weather; low humidity; and dry shrubs and grass make? — ideal conditions for fire. Here in Los Angeles we experience these conditions seasonally. This season is known as "fire season" and occurs usually between September and November. But, the time of year does not determine the season, specific conditions do. Conditions for a fire include: humidity level, wind speed, slope, air temperature, and plant fuel moisture. Plant fuel moisture is the most significant factor.

Specific heat plays a role in plant moisture levels and the speed with which plants will catch on fire. The amount of heat that must be added to 1 gram of a substance to raise its temperature 1° C is called specific heat. Water has a high specific heat, much higher than most materials, and it tends to change temperature more slowly. For example, the sun shines down on a swimming pool and the concrete around it, adding the same amount of heat to both water and concrete; but the concrete will get hotter. Because the specific heat of water is greater, it takes more heat energy to make it hotter. This is significant, because young, green plants, with high moisture levels, need more heat energy to catch fire than dry, low moisture level ones. Plants with little or no "fuel moisture" or less "specific heat" will catch fire much easier.

When dry, hot, gusty Santa Ana winds are present (usually during September through November), they replace cooler, more moist air (lowering the humidity level and lowering the fuel moisture level). When moisture levels are low, the oil content in most chaparral plants is high — promoting fire.

As the year progresses and temperatures increase, National Park Service Fire Managers pay close attention to humidity levels, wind conditions, and fuel moisture contents to gauge the conditions for fire. Failure to do this can have serious consequences.